

Appln No. 09/578,355
Amdt date August 23, 2004
Reply to Office action of May 21, 2004

REMARKS/ARGUMENTS

In the Office action dated May 21, 2004, the Examiner rejected all of the then pending claims, claims 19 - 21 and 23 - 53, under 35 U.S.C. § 103.

By this Amendment, Applicant has added claim 54. Reconsideration and reexamination are hereby requested for claims 19 - 21 and 23 - 54 that are now pending in this application.

Request for Acknowledgment of Receipt of Priority Documents

On May 24, 2000, Applicant submitted a certified copy of a priority document (Japanese patent Application No. 11-148317 which was filed on May 27, 1999) to the U.S. Patent Office. Applicant again requests that the Examiner acknowledge that the Office has received this priority document (e.g., on FORM PTO-326) or notify Applicant that the Office has not received this document.

Request for Acknowledgment of Information Disclosure Statements

Applicant submitted three separate Information Disclosure Statements including references to the U.S. Patent Office on May 24, 2000, on November 22, 2002 and on December 6, 2002. For the Examiner's convenience, copies of the transmittal forms and the FORMS PTO/SB/08A/B for these Information Disclosure Statements are attached as an Appendix to this Amendment. Applicant again requests that initialed copies of the FORMS PTO/SB/08A/B be entered in the application file and returned to Applicant with

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the next communication from the Office in accordance with MPEP § 609.

Response to the Rejection of the Claims Under 35 U.S.C. § 103

The Examiner rejected claims 19 - 21, 23, 24, 30 - 32, 38 - 40 and 46 - 48 under 35 U.S.C. § 103(a) as being unpatentable over Yanagawa, U.S. Patent No. 5,128,999, in view of Gerzon, U.S. Patent No. 5,671,287. Claims 19, 30, 38 and 46 are independent. Claims 18 - 21 and 23 - 24, 31 - 32, 39 - 40 and 47 - 48 are dependent on independent claims 19, 30, 38 and 46, respectively.

Applicant respectfully submits that combination of Yanagawa and Gerzon does not disclose "delaying said . . . audio signal in accordance with . . . distance [between][from] . . . reproduction points" as claimed in independent claims 19, 30, 38 and 46. Claims 19 and 38 recite, in part: "delaying said branched audio signal in accordance with at least one distance between said reproduction points." Claims 30 and 46 recite, in part: "delaying said added audio signal in accordance with the distance from said given reproduction point to said predetermined reproduction points located far from said given reproduction point."

As best understood Yanagawa discloses a sound field correcting apparatus that adjusts delay times of audio signals based on amplitudes of two channels (L_t and R_t). See, for example, the Yanagawa specification at Column 3, lines 64 - 67 and at Column 4, line 52 - column 5, line 13, specifically Equations 1 - 3, where it is explained that the steering

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emphasis detection signal is based on the amplitudes (mean values) of L_t and R_t .

Gerzon discloses processing a signal to generate a "simulated distance d." For example, Gerzon states at column 31, line 63 through column 32, line 45:

The requirements on the early reflection simulation means 61 for producing a good sense of distance are described in detail in the inventor's cited co-pending patent application and preprint 3308, and the present invention allows the angular size of the direct sound to be simulated in a realistic manner, for example according to equ. (63), corresponding to the simulated distance d without the unpleasant side effects of prior-art methods of spreading, and without alteration of the overall gain magnitude of the direct signal path sound, provided only that the pseudostereo means 10 is unitary or otherwise preserves the energy of signals passing through it. As noted in the two just-cited references, the maintainance of appropriate gain magnitude ratios between the direct and indirect signal paths is important for the correct interpretation of early reflection distance cues.

FIG. 22 shows the application of the method of FIG. 21 in the case where it is desired to be able to adjust simultaneously the direction, distance and apparent acoustical size of a sound source signal S. The direct and indirect signal paths now incorporate respective delay means 63, 64 and gain means 65, 66 responsive to distance control means 71. This alters the apparent distance if the values of the gains 65, 66 and delays 63, 64 are adjusted appropriately, as described in the two just-cited references. One or two of the means 63, 64, 65, 66 may be "trivial", where a delay is trivial if it is omitted or has zero delay, and a gain is trivial if it is omitted or has unity gain. If desired, panpot means 50, 50b may be provided in the respective direct and indirect signal paths responsive to a sound source direction control means 72 in order to position (or for a stereo source, to reposition using rotation matrix means) the source signal S in direction. As in FIG. 21, a pseudostereo means 60 is also provided in the direct signal path, and may be responsive

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to a spread control means 73. It is preferred that the spread control means should control the apparent acoustic width w' , and that the degree of spread of the pseudostereo means should be responsive both to the setting w' of the spread control means 73 and the distance setting d of the distance control means 71, for example to produce the reproduced angular spread of equ. (63). The indirect signal path, as in FIG. 21, also contains an optional all-pass phase compensation means 60 and an early reflection simulation means 61 handling a stereo signal path, and the outputs of the direct and indirect signal paths are combined using stereo summing means 69.

Signal paths shown by a single line in FIGS. 21 or 22 may be mono or stereo (in its broad sense), and panpots 50, 50b may be energy-preserving rotation or encoding or conversion matrix means, and panpot means 50 may follow rather than precede the pseudostereo means 10, such as is shown in FIGS. 4a or 17.

The above quotation includes the passage cited by the Examiner as teaching the claimed "delaying." However, from the above it is apparent that Gerzon does not teach or suggest "delaying" the signals to be added "in accordance with at least one distance between said reproduction points" or "in accordance with the distance from said given reproduction point to said predetermined reproduction points located far from said given reproduction point." Rather, as best understood Gerzon says nothing that would suggest that his delay is based in any way on "distance between . . . reproduction points."

In contrast with cited references, the invention of claims 19, 30, 38 and 46 provide structure and methods that may be used, for example, to adjust signals in accordance with the distance between speakers and a listener. Such structure and methods may be used, for example, to solve a problem in some

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conventional systems where sound heard by a listener is governed by the nearest speaker to the listener in the case where the listening position is not at the center of the speakers surrounding the listener. This problem may be common, for example, in the cabin of a vehicle.

In summary, independent claims 19, 30, 38 and 46 are not obvious in view of the cited references considered either separately or in combination. Accordingly, Applicants respectfully submit that independent claims 19, 30, 38 and 46 are patentable over these references.

Claims 18 - 21 and 23 -24, 31 - 32, 39 - 40 and 47 - 48 that depend on claims 19, 30, 38 and 46 also are novel over the cited references for the reasons set forth above. In addition, these dependent claims are novel over these references for the additional limitations that the dependent claims contain. For example, new claim 54 recites that "sound signals for the reproduction points are adjusted in accordance with at least one distance between the reproduction points and a listener." This aspect of claim 54 is not taught by the references of record.

Claims 25 - 29, 33 - 37, 41 - 45 and 49 - 53 were rejected under 35 U.S.C. § 103(a) "as being unpatentable over Yanagawa, U.S. Patent No. 5,128,999, as modified by Gerzon, U.S. Patent No. 5,671,287, as applied to claims 19, 30, 38 and 46 above, and further in view of Kuusama, U.S. Patent No.6,332,026."

This rejection is predicated on the rejection of independent claims 19, 30, 38 and 46. As Applicant argued above, however, the underlying rejection of the independent claim under section 103 should be withdrawn. Accordingly,


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Applicant submits that claims 25 - 29, 33 - 37, 41 - 45 and 49 - 53 are not obvious in view of the cited combination.

SUMMARY

In view of the above remarks it is submitted that the claims are patentably distinct over the cited references and that all the rejections to the claims have been overcome. Reconsideration and reexamination of the above Application is requested.

Respectfully submitted,
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